

(12) INTERNATIONAL PUBLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
19 August 2004 (19.08.2004)

PCT

(10) International Publication Number
WO 2004/070986 A3

(51) International Patent Classification⁷: **H04N 1/409**,
1/58, 11/02

(21) International Application Number:
PCT/US2004/001583

(22) International Filing Date: 20 January 2004 (20.01.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/443,672 28 January 2003 (28.01.2003) US

(71) Applicant (for all designated States except US): **THOMSON LICENSING S.A.** [FR/FR]; 46, Quai A. Le Gallo, Boulogne 92648 (FR).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **RAMASWAMY, Kumar** [IN/US]; 71 Sayre Drive, Princeton, New Jersey 08540 (US). **COOPER, Jeffrey** [US/US]; 11 Toth Lane, Rocky Hill, New Jersey 08553 (US). **BOYCE, Jill** [US/US]; 3 Brandywine Court, Manalapan, NJ 07726 (US).

(74) Agents: **TRIPOLI, Joseph S. et al.**; c/o Thomson Licensing Inc., 2 Independence Way, Suite 200, Princeton, NJ 08540 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:
27 January 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **ROBUST MODE STAGGERCASTING**

(57) Abstract: A method and apparatus for staggercasting, encodes a first signal representing content and encodes a second signal representing the content using encoding relatively more robust than the encoding of the first encoded content representative signal. A composite signal including at least the first and second encoded signals is generated, in which one of the first and second encoded signals is delayed with respect to the other encoded signal. If an error is detected in the composite signal, then the undelayed encoded signal is decoded to reproduce the content. Otherwise, the delayed encoded signal is decoded to reproduce the content.

WO 2004/070986 A3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/01583

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : H04N 1/409, 1/58, 11/02,
US CL : 375/240.01, 240.27

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 375/240.01, 240.27

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 20020181581 A1 (BIRRU et al) 05 December 2002 (05.12.2002), Paragraphs [0021], [0029]-[0031], [0040], [0043]-[0044], Figure 2.	1-5, 7-11, and 13
Y	US 5,532,748 A (NAIMPALLY) 02 July 1996 (02.07.1996), Abstract, column 1 lines 53-64, column 2 lines 1-11, column 4 lines 33-53, column 5 lines 15-20, lines 40-43 and 50-67, column 6 lines 1-6, figures 3A and 4.	1-5, 7-11, and 13
A	US 6,211,926 B1 (WON) 03 April 2001 (03.04.2001), Full Document	1-14
A	US 6,370,666 B1 (LOU et al) 09 April 2002 (09.04.2002), Full Document.	1-14
A	US 20020191712 A1 (GADDAM et al) 19 December 2002 (19.12.2002), Full Document.	1-14

☐ Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"B" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T"

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X"

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"

document member of the same patent family

Date of the actual completion of the international search

23 November 2004 (23.11.2004)

Date of mailing of the international search report

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Facsimile No. (703) 305-3230

Authorized officer

Chris Kelley

Telephone No. 703-305-3900

10 DEC 2004

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US04/01583

Continuation of B. FIELDS SEARCHED Item 3:

IEEE

search terms: mpeg, transmute, error, fading, vsb